

- (d) a second network interconnecting the workstations and providing an AV path, logically separate from the data path, for carrying AV signals among the workstations, the AV signals representing video images and spoken audio of the participants; and
- (e) an AV conference manager, in communication with the data conference manager and the second network, for managing a videoconference, during which the video image and spoken audio of one of the participants can be reproduced at the workstation of another of the participants by utilizing the data network operating system and data network protocol of the first network.

3. The teleconferencing system of claim 2 wherein the first and second networks employ physically separate paths.

⁵
~~4~~. The teleconferencing system of claim ⁴~~3~~ wherein the AV signals carried among the workstations are either analog or digital signals or a combination of analog and digital signals.

¹⁰
~~5~~. The teleconferencing system of claim ¹~~2~~ wherein the AV and data signals are multiplexed on the same physical path.

⁶
~~6~~. The teleconferencing system of claim ¹~~2~~ wherein the AV and data paths are implemented with unshielded twisted pair wiring.

Sub B2
7. The teleconferencing system of claim 6 wherein the AV path is implemented with the remaining two pairs of an existing four-pair unshielded twisted pair wiring installation, one pair of which implements the data path.

8. The teleconferencing system of claim 2 further comprising:

(a) at least one signal router for routing at least the AV signals among participant's workstations in such a way so as to optimize the carrying of AV signals between the workstations.

A1
9. The teleconferencing system of claim 8 wherein the router optimizes the signal routing based on any one or more criteria from the group of criteria consisting of the actual state of the AV path, the anticipated state of the AV path, the cost of use of the AV path and the direction of the AV signals flow on the AV path.

10. A teleconferencing system for conducting a teleconference among a plurality of participants having workstations with associated monitors for displaying visual images, and with associated AV capture and reproduction capabilities for capturing and reproducing video images and spoken audio of the participants, the workstations being interconnected by a first network, the network providing a data path for carrying digital data signals among the workstations, the teleconferencing system comprising:

(a) an AV path for carrying AV signals among the workstations, the AV signals representing video images and spoken audio of the participants;

(b) an AV conference manager for managing a videoconference during which the video image and spoken audio of one of the participants is reproduced at the workstation of another of the participants;

(c) a participant locator which associates a first workstation with a first of the participants having a participant identifier, the identifier entered when the first participant logs into the first workstation, whereby a call to initiate a videoconference with the first participant is routed to the first workstation; and

A1 (d) a plurality of switches, in communication with the AV and data paths, each switch being operable to put at least one workstation in communication with both the AV and data paths and configured to establish, a teleconference between any two or more participants out of a total pool of at least 100 participants. *B*

11. The teleconferencing system of claim 10 wherein at least two of the switches are geographically dispersed and the AV and data paths are defined by at least one Wide Area Network.

12. The teleconferencing system of claim 11 wherein the AV path connects the workstation of a first of the participants at a first location to the workstation of a second of the participants at a second location via a third location, the system further comprising:

(a) an AV signal switcher at the third location, coupled to the AV path, for receiving and routing the AV signals to a location other than the third location if the AV signals are intended to be processed at the other location; and

(b) at least first and a second codecs, respectively at the first and second locations, for compressing the AV signals and decompressing compressed AV signals, each codec being in communication with the AV path and arranged to receive communications from the AV signal switcher, such that images of the first participant, compressed by the first code and routed to the second location via the third location, are not decompressed at the third location.

13. The teleconferencing system of claim 12, further comprising:

(a) a data conference manager for managing a data conference, during which data can be shared among a plurality of the participants and displayed on the monitors of their respective workstations, and for managing the videoconference by utilizing a data network operating system and data network protocol of the first network; and

(b) an AV conference manager in communication with the data conference manager and the second network, for managing a videoconference, during which the video image and spoken audio of one of the participants can be reproduced at the workstation of another of the participants by utilizing the data network operating system and data network protocol of the first network.

14. The teleconferencing system of claim 4, wherein video images are reproduced at the workstations at at least 20 frames per second.

15. The teleconferencing system of claim 14, wherein video images are reproduced at the workstations at at least 30 frames per second.

Sub C2
16. A method of conducting a teleconference among a plurality of participants comprising the steps of:

- AD
- (a) capturing and reproducing video images and spoken audio of the participants on a plurality of workstations each having a monitor;
 - (b) sharing data among a plurality of the workstations along a first network providing a data path;
 - (c) managing a data conference, during which data can be shared among a plurality of the participants and displayed on the monitors of their respective workstations, by utilizing a data network operating system and data network protocol of the first network;
 - (d) interconnecting the workstations with a second network providing an AV path, logically separate from the data path, for carrying AV signals, representing video images and spoken audio of the participants among the workstations; and
 - (e) managing a videoconference, during which the video image and spoken audio of one of the participants can be reproduced at the workstation of another of the participants, by utilizing the data network operating system and data network protocol of the first network.

17. The method of claim 16 wherein the AV signals carried among the workstations are either analog or digital signals or a combination of analog and digital signals.

12 11
18. The method of claim 16 further comprising the step of multiplexing the AV and data signals on the same physical path.

¹³
~~19~~¹² The method of claim ~~18~~ further comprising the step of:

routing at least the AV signals among participant's workstations in such a way so as to optimize the carrying of AV signals between the workstations.

Sub C3
11
20. The teleconfering system of claim 19 wherein the signals are routed based on any one or more criteria from the group of criteria consisting of the actual state of the AV path, the anticipated state of the AV path, the cost of use of the AV path and the direction of the AV signals flow on the AV path.

21. A method for conducting a teleconference among a plurality of participants having workstations with associated monitors for displaying visual images, and with associated AV capture and reproduction capabilities for capturing and reproducing video images and spoken audio of the participants, the workstations being interconnected by a first network, the network providing a data path for carrying digital data signals among the workstations, the method comprising the steps of:

- B*
- (a) carrying AV signals representing video images and spoken audio of the participants along an AV path among the workstations;
 - (b) managing a videoconference during which the video image and spoken audio of one of the participants is reproduced at the workstation of another of the participants;
 - (c) associating a first workstation with a first of the participants having a participant identifier entered when the first participant logs into the first workstation; and
- 72*

(d) routing a call to initiate a videoconference with the first participant to the first workstation using the association between the first workstation and the identifier.

22. The method of claim 21 wherein the AV path connects the workstation of a first of the participants at a first location to the workstation of a second of the participants at a second location via a third location, the method further comprising the steps of:

(a) receiving and routing the AV signals to a location other than the third location if the AV signals are intended to be processed at the other location;

AL (b) providing at least first and a second codecs, respectively at the first and second locations, for compressing the AV signals and decompressing compressed AV signals, with each codec being in communication with the AV path; and B

(c) arranging the codes to receive communications such that images of the first participant, compressed by the first code and routed to the second location via the third location, are not decompressed at the third location.

23. The method of claim 22, further comprising the steps of:

(a) managing a data conference to share among a plurality of the participants and displaying the data on the monitors of their respective workstations;

(b) managing the videoconference by utilizing a data network operating system and data network protocol of the first network; and

AA
(c) managing a videoconference, to reproduce the video images and spoken audio of one of the participants at the workstation of another of the participants by utilizing the data network operating system and data network protocol of the first network.

B
24. The method of claim 23, wherein video images are reproduced at the workstations at at least 20 frames per second.

AA
25. The method of claim 24, wherein video images are reproduced at the workstations at at least 30 frames per second.

REMARKS

This application is a 35 U.S.C. §121 divisional application of parent U.S. patent application 08/131,523. Claims 2 to 12 in this application correspond to amended versions of certain of the claims in Group I defined in a Restriction/Election Requirement in the parent application.

Furthermore, claim 2 corresponds in part to claim 12 in PCT application PCT/US94/02961. In the PCT application the IPEA/US for PCT/US94/02961 issued a Preliminary Examination Report indicating that claim 12 lacks an inventive step under PCT Article 33(3) as being obvious over Vin et al. "Multimedia Conferencing In The Etherphone Environment" and Rangan et al. "Software Architecture for Integration of Video Service in the Etherphone System."